

## Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (currently amended) A packet buffering system for predictively processing data packets in a data packet network, the data packets associated with a plurality of data flows, the data flows from of a plurality of protocols, the system comprising:  
at least one input port for receiving data packets from a plurality of sources, wherein the received data packets arrive from the plurality of data flows, interspersed;  
at least one output port for sending out data packets to a plurality of destinations;  
a packet predictor, coupled to said at least one input port, for predicting information about a future packet in any one of the plurality of data flows based on history of a-previously received packets from the plurality of data flows, said history stored in a memory coupled to said packet predictor;  
a plurality of queues for storing packets received from said plurality of sources, and for storing said predicted information about said future packet;  
direction logic, coupled to said packet predictor, for generating a Packet ID for said future packet which is stored in one of said plurality of queues;  
buffer logic, coupled to said packet predictor, for validating said predicted information about said future packet based on access to said memory;  
~~a plurality of queues for storing packets received from said plurality of sources, and for storing said predicted information about said future packet; and~~  
a processing core, coupled to said plurality of queues, ~~such that at least some processing for said future packet may be accomplished before said future packet actually arrives at the system~~wherein if said buffer logic validates said predicted information, notification is made to said direction logic

which passes said Packet ID for said future packet to said processing core to initiate speculative processing.

2. (original) The system of claim 1 wherein the data packet network is the Internet network.
3. (previously amended) The system of claim 1 wherein the packet predictor utilizes a history record periodically updated by the system, to generate predicted data.
4. (original) The system of claim 3 wherein the history record comprises characteristics of recently received data packets.
5. (previously amended) The system of claim 4 wherein the history record further comprises results of past predictions.
6. (previously amended) The system of claim 1 wherein said packet predictor predicts specific characteristics, comprising one or more of packet type, packet flow identification, sender information, destination information, and packet size for said future packet.
7. (original) The system of claim 1 comprising a packet router.
8. (original) The system of claim 1 comprising a data server.
9. (currently amended) A packet predictor system for predicting information about ~~a future packets~~ to be received within a data packet processor, the future packets associated with a plurality of data flows a plurality of protocols, the predicted information being processed by a processing core prior to the future packets being received, the processing reducing latency in routing the future packets ~~to its~~-their destinations, the system comprising:  
  
an input for receiving information about ~~a first-non-predicted packets~~ received for processing;  
  
a packet predictor, coupled to said input, for predicting ~~the information~~ about the future packets, based upon the information received about the ~~first-non-predicted packets~~;

a plurality of queues, coupled to said input and said packet predictor, for storing the predicted information; and

a processing core, coupled to said plurality of queues, for processing the predicted information before the future packets ~~is~~ are received by said input;

wherein by processing the predicted information before the future packets ~~is~~ are received, latency for delivering the future packets to an output is reduced.

10. (previously amended) The packet predictor system of claim 9 wherein the data packet processor comprises a data router operating on the Internet network.
11. (previously amended) The packet predictor system of claim 9 comprising a history record consulted each time a prediction is made.
12. (previously amended) The packet predictor system of claim 11 wherein the history record comprises history of real packets received and processed.
13. (previously amended) The packet predictor system of claim 11 wherein the history record comprises history of predictions and results of the predictions.
14. (previously amended) The packet predictor system of claim 9 wherein the history record is stored in a memory accessible to the system.
15. (previously amended) The packet predictor system of claim 9 wherein said packet predictor predicts specific characteristics, comprising one or more of packet type, packet flow identification, sender information, destination information, and packet size.
16. (previously amended) The packet predictor system of claim 9 wherein the data packet processor comprises a data server.
17. (currently amended) A method for reducing latency in packet processing within a packet processor, comprising the steps of:

receiving packets associated with a plurality of data flows, the data flows from a plurality of protocols, ~~from a plurality of sources~~;

developing and storing a history of packet information from the received packets;

predicting future information about future packets from the stored history;  
validating the future information about the future packets from the stored history,  
and if validated;  
processing the future information about the future packets before the future  
packets are received;  
wherein by processing the future information about the future packets before the  
future packets are received, latency in delivering the future packets to their  
destinations is reduced; and  
wherein the information comprises one or more of packet type, packet flow  
identification, source information, destination information, and packet  
size.

18. (original) The method of claim 17 wherein the packet processor is coupled with a data packet network.
19. (original) The method of claim 18 wherein the data packet network is the Internet network.
20. (previously amended) The method of claim 17 comprising a step for maintaining a history of either or both of packets actually received and results of prior predictions.
21. (canceled)
22. (previously amended) The method of claim 17 wherein said step of processing is abandoned if it is determined not to agree with the real data once it arrives.
23. (canceled)
24. (previously amended) The method of claim 17 wherein in, if some of the results from processing the predicted future information are wrong they are abandoned, and results which are correct are retained, to reduce processing for an arriving packet based on the prediction.